*My project will predict housing prices in North Carolina using publicly available datasets like FHFA indexes, Realtor.com data, and NC housing reports. My goal is to explore factors influencing housing prices—like location, economic trends, and seasonal variations—using regression and time-series models. I’ll evaluate model performance with Root Mean Squared Error and Mean Absolute Error. I also included data quality checks and feature engineering. I’d love your feedback on the scope and if the models I chose, especially AutoRegressive Integrated Moving Average or Long Short-Term Memory Network, fit within our class environment*

# *ARIMA –* AutoRegressive Integrated Moving Average

**🔎 What is it?**

• A **classical statistical model** used for **time-series forecasting**.

• It predicts future points by using **past values** (AutoRegressive) and **past errors** (Moving Average).

• The **“Integrated”** part deals with making the data stationary (removing trends).

**⚙️ When to Use:**

• When your dataset is a time series (data points over time like monthly housing prices).

• Good for data with clear trends or seasonality after preprocessing.

**📊 Example Use:**

Predict future **average home prices** based on historical quarterly price data.

# *LSTM -* Long Short-Term Memory Network

**🔎 What is it?**

• A **type of Recurrent Neural Network (RNN)** used in **deep learning**.

• Designed to handle **sequential data** and capture **long-term dependencies** (remembers data from earlier time steps).

• Great for **complex time-series patterns** that are hard for traditional models like ARIMA.

**⚙️ When to Use:**

• When your time series data is complex or non-linear.

• Useful for housing markets influenced by many factors over time (economics, seasons, policy changes).

**📊 Example Use:**

Use LSTM to predict **future housing prices** while capturing complex patterns like market cycles or economic events.

